Transcripts of Elissa Epel Spotlight video

Behavioral science is just at the beginning of providing answers to understanding good health and longevity.

I find stress really interesting to study because it's not just one factor.

It is a psychological state that shapes everything about an individual, that shapes how they interact in the world and how their health is being shaped over time.

So how does stress really work?

How does it get under the skin?

Stress is a biological reaction that affects tissue and, in fact, accelerates the aging of tissue.

Here, you see the pairs of chromosomes and, at the caps of each pair is the telomeric DNA that map on to our behavior and our health.

The length of these caps; that's what we're measuring.

It's a vital aging clock in our own complex body, so when telomeres get short, that predicts early disease and early mortality.

For the last 10 years, I've been fortunate to collaborate with Elizabeth Blackburn.

So she's normalizing the samples here.

EPEL: Elizabeth and her colleagues won a Nobel Prize for their discovery of the cell aging system.

Elizabeth's lab at UCSF is one of the few labs in the world that can accurately measure the age of a cell.

They have a room that is filled with a robot that can actually take the human error out of the process.

BLACKBURN: The collaboration with Elissa Epel, in which she's been asking how behavior impacts on disease processes, has been very productive because we've brought together cellular and molecular approaches with behavioral approaches.

EPEL: So most of my studies now are really focused on measuring stress and coping well, how it's affecting eating behavior, obesity, metabolism, and how it's affecting the rate of how our cells age.

All right, so I'm going to be hooking you up.

EPEL: So we've been given this opportunity to address these very questions in our current study.

This is called the SAGE study, the study of Stress, AGing, and Emotions in parents, so it's a study of parenting stress.

This one is going to measure the pulse in your fingertip.

EPEL: And half of the parents have a child with an autism spectrum disorder and the other half have neurotypical children.

I'm going to go ahead and attach the EKG.

EPEL: So after they're hooked up, we then have them do different tasks on the computer; that's a window into how stress response of their brain is.

And then, for each one, you can rate how negative or positive it felt to you.

So, for the SAGE study, we get a blood draw to assess their cell aging and then those cells are transported to Liz Blackburn's lab.

We find that the moms who feel the most stress had cells that looked a lot older -- on average, about 10 years older.

The diagnosis of autism is a chronic grief.

You don't get over it.

That acceptance is a very critical piece in adapting to chronic stress.

Carolyn's situation would be overwhelming to anyone and she showed a lot of acceptance and resilience, even though she also lives with chronic sadness.

-You go through the cycles of grief, just as if it were a death.

And it's not that your child's died, but what's died is your... Expectation of the future.

WOMAN: So let's just center our bodies.

EPEL: We're in the midst of doing the MAMAS study. MAMAS stands for Maternal Adiposity -- which is fat -- Metabolism, And Stress.

-Nice, full stretch up.

EPEL: And this is an 8-week course where we're trying to teach pregnant women to reduce their stress and to eat in a more healthy way.

Just take some full, deep breaths.

EPEL: So it's really using our power of attention and awareness and connecting with our body.

So the heart of the MAMAS intervention is our weekly classes.

-And we're going to begin with the Hunger Awareness Scale.

EPEL: So there are a lot of health risks for the mom, particularly overweight women, that come with pregnancy.

In addition to all of the risk to the mom, the excessive weight programs the baby for life.

And depression and stress are also transmitted to the fetus.

So we are working hard to see how reversible this is.

Step right out here.

EPEL: The MAMAS study is led by Kim Coleman-Phox, who is a maternal- health researcher.

Okay, it's 179.

The subjects come in for their baseline assessment, which establishes where they begin before the intervention.

51.25.

-We then measure their height, their waist and hip, so that we can determine what their waist/hip ratio is.

Okay, breathe normally.

EPEL: To assess abdominal fat safely in pregnant women, the only method available to us is to do an ultrasound.

Okay, here we go.

We then measure their body composition, using the BOD POD, which measures body composition using air displacement.

It's a very expensive, state-of-the-art tool.

EPEL: So the women that we're targeting are low-income minority women who are already overweight or obese and it is striking, how much they are motivated to participate in our study.

The third study that we have ongoing is called the SEED study, and that is the Stress, Eating, and Early Development study.

-Hi, Savannah.

What do you think?

The goals of the SEED study are to see what we can learn about the effects of the intervention on the babies that are born to the women in the MAMAS groups.

I'm doing a little bit to check her reflexes.

Can an intervention that's targeting stress and weight during pregnancy have an impact on the development of the fetus and the way that that baby lives in the world after they're born?

I move the red ball over here.

Look at that.

Wonderful movement of the eyes and the head.

EPEL: We do a visit in the home or the clinic.

[Baby voice]
BUSH: This is going to tell us about your hormone levels.

EPEL: And we also do a battery of tests that looks at how responsive the baby is to its environment and how stress-reactive the baby is, versus calm.

She's about 60.

BUSH: We take measurements of the baby's growth.

[Baby voice]
And you are 42 centimeters.

BUSH: We want to get a sense of their length and their weight and their body fat.

How often does she settle down very quickly?

-Always.

BUSH: We also ask the mother a lot of questions about the baby's temperament, their personality, and behavior.

Were you worried always, often, sometimes, rarely, or never that she would become overweight?

Never.

This SEED study has the most exciting implications for public health.

The preliminary data are really exciting.

Basically, they show that women who do well and respond to the intervention by having optimal weight gain and a decrease in stress are having babies with better physical and mental health outcomes.

So if this finding holds with a large sample, we can't think of anything more exciting than disseminating this.

And the data, so far, adds new meaning to my life.

It's very exciting to think that there is a way to improve the health of the next generation.